



**MBR30...CT**  
**MBRB30...CT**  
**MBR30...CT-1**

**SCHOTTKY RECTIFIER**

**30 Amp**

$I_{F(AV)} = 30\text{Amp}$   
 $V_R = 30 - 45\text{V}$

**Major Ratings and Characteristics**




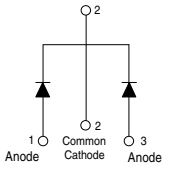
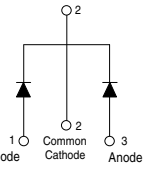
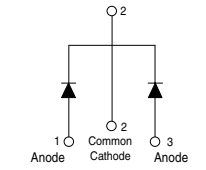
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	30	A
$I_{FRM}$ @ $T_C = 123^\circ\text{C}$ (PerLeg)	30	A
$V_{RRM}$	35-45	V
$I_{FSM}$ @ tp = 5 $\mu\text{s}$ sine	1020	A
$V_F$ @ 20Apk, $T_J = 125^\circ\text{C}$	0.6	V
$T_J$ range	-65 to 150	$^\circ\text{C}$

**Description/ Features**

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C  $T_J$  operation
- Center tap TO-220, D<sup>2</sup>Pak and TO-262 packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

**Case Styles**

MBR30..CT	MBR30.. S	MBR30.. -1
		
<p>Base Common Cathode</p>  <p>1 Anode    2 Common Cathode    3 Anode</p> <p><b>TO-220</b></p>	<p>Base Common Cathode</p>  <p>1 Anode    2 Common Cathode    3 Anode</p> <p><b>D<sup>2</sup>PAK</b></p>	<p>Base Common Cathode</p>  <p>1 Anode    2 Common Cathode    3 Anode</p> <p><b>TO-262</b></p>

**Voltage Ratings**

Parameters	MBR3035CT MBRB3035CT MBR3035CT-1	MBR3045CT MBRB3045CT MBR3045CT-1
V <sub>R</sub> Max. DC Reverse Voltage (V)	35	45
V <sub>RWM</sub> Max. Working Peak Reverse Voltage (V)		

**Absolute Maximum Ratings**

Parameters	Values	Units	Conditions
I <sub>F(AV)</sub> Max. Average Forward Current (Per Leg) (Per Device)	15	A	@ T <sub>C</sub> = 123° C, (Rated V <sub>R</sub> )
	30		
I <sub>FRM</sub> Peak Repetitive Forward Current (Per Leg)	30	A	Rated V <sub>R</sub> , square wave, 20kHz T <sub>C</sub> = 123° C
I <sub>FSM</sub> Non Repetitive Peak Surge Current	1020	A	5µs Sine or 3µs Rect. pulse Following any rated load condition and with rated V <sub>RRM</sub> applied Surge applied at rated load conditions halfwave, single phase, 60Hz
	200		
E <sub>AS</sub> Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	T <sub>J</sub> = 25° C, I <sub>AS</sub> = 2Amps, L = 5mH
I <sub>AR</sub> Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1µsec Frequency limited by T <sub>J</sub> , max. V <sub>A</sub> = 1.5 x V <sub>R</sub> typical

**Electrical Specifications**

Parameters	Values	Units	Conditions
V <sub>FM</sub> Max. Forward Voltage Drop (1)	0.76	V	@ 30A T <sub>J</sub> = 25° C
	0.6	V	@ 20A T <sub>J</sub> = 125° C
	0.72	V	@ 30A T <sub>J</sub> = 125° C
I <sub>RM</sub> Max. Instantaneous Reverse Current (1)	1	mA	T <sub>J</sub> = 25° C
	100	mA	T <sub>J</sub> = 125° C Rated DC voltage
V <sub>F(TO)</sub> Threshold Voltage	0.29	V	T <sub>J</sub> = T <sub>J</sub> max.
r <sub>t</sub> Forward Slope Resistance	13.6	mΩ	
C <sub>T</sub> Max. Junction Capacitance	800	pF	V <sub>R</sub> = 5V <sub>DC</sub> (test signal range 100Khz to 1Mhz) 25° C
L <sub>S</sub> Typical Series Inductance	8.0	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change	10000	V/µs	(Rated V <sub>R</sub> )

(1) Pulse Width < 300µs, Duty Cycle < 2%

**Thermal-Mechanical Specifications**

Parameters	Values	Units	Conditions
T <sub>J</sub> Max. Junction Temperature Range	-65 to 150	°C	
T <sub>stg</sub> Max. Storage Temperature Range	-65 to 175	°C	
R <sub>thJC</sub> Max. Thermal Resistance Junction to Case (Per Leg)	1.5	°C/W	DC operation
R <sub>thCS</sub> Typical Thermal Resistance Case to Heatsink	0.50	°C/W	Mounting surface, smooth and greased Only for TO-220
R <sub>thJA</sub> Max. Thermal Resistance Junction to Ambient	50	°C/W	DC operation For D <sup>2</sup> Pak and TO-262
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min. 6 (5)	Kg-cm (lbf-in)	Non-lubricated threads
	Max. 12 (10)		

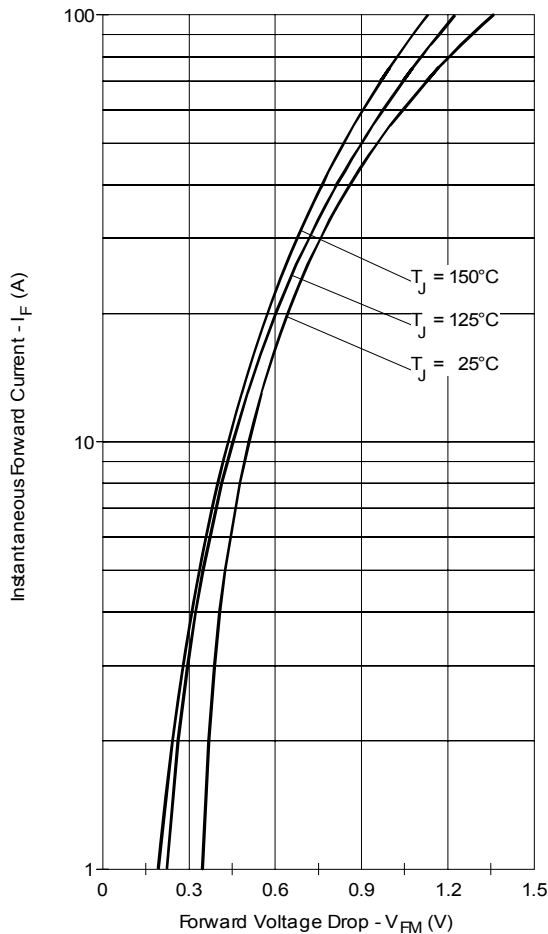


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

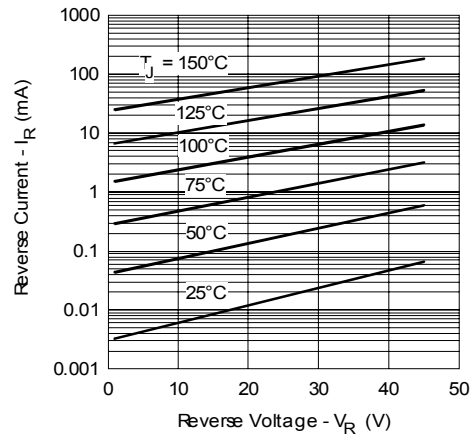


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

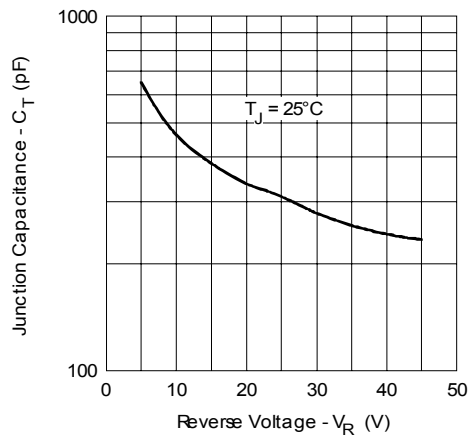


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

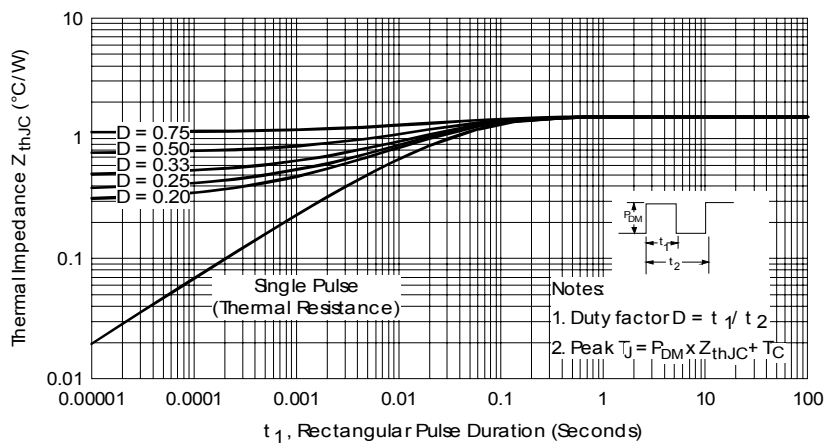


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

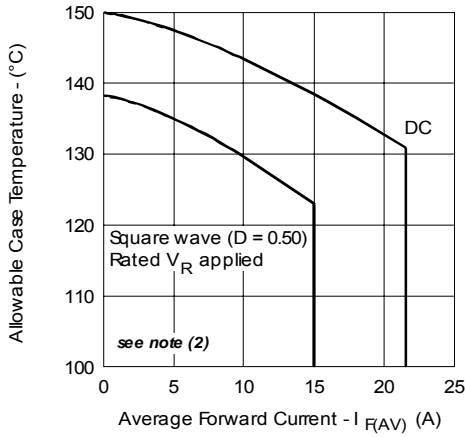


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

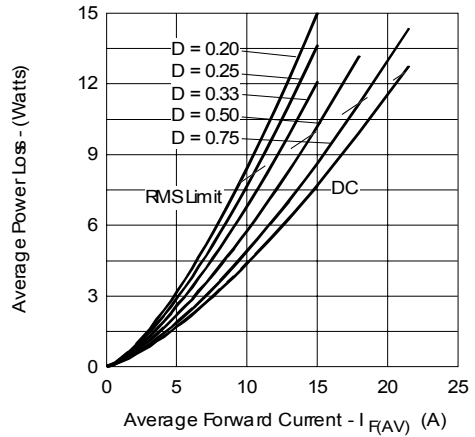


Fig. 6- Forward Power Loss Characteristics (Per Leg)

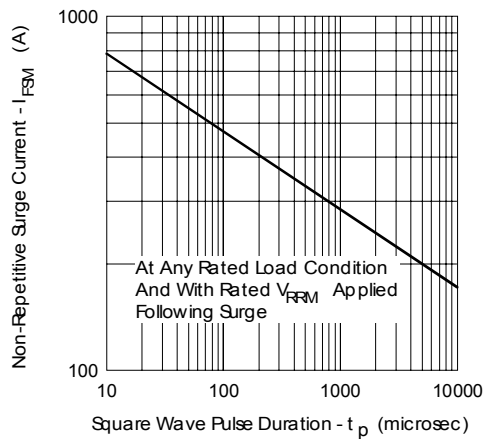
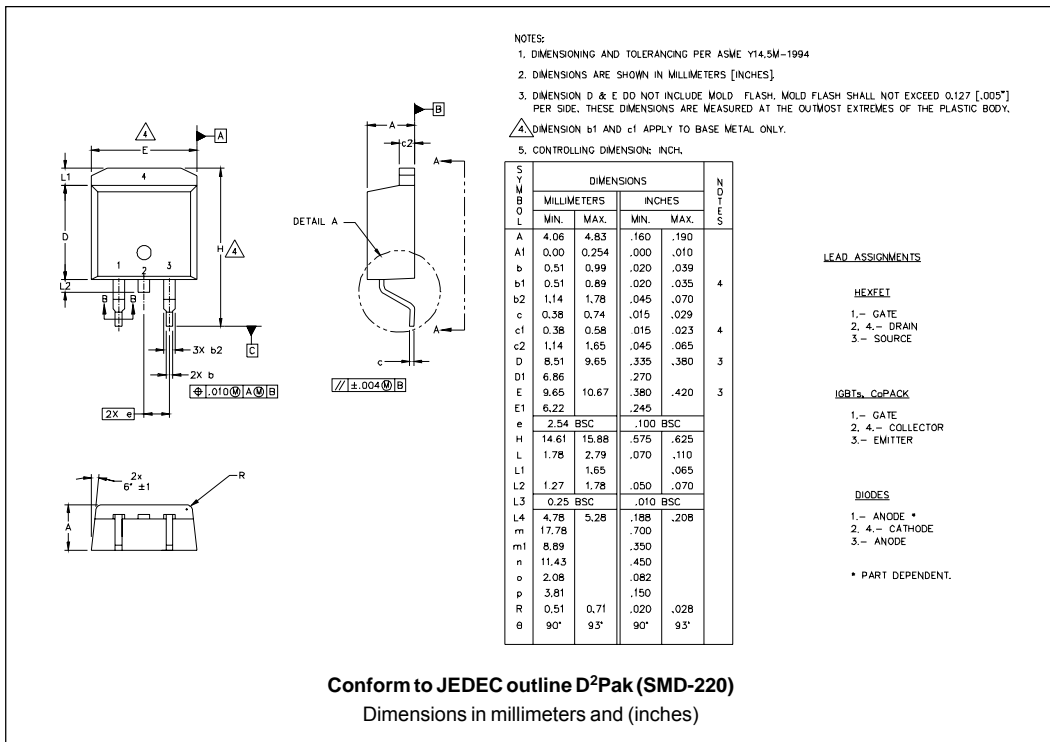
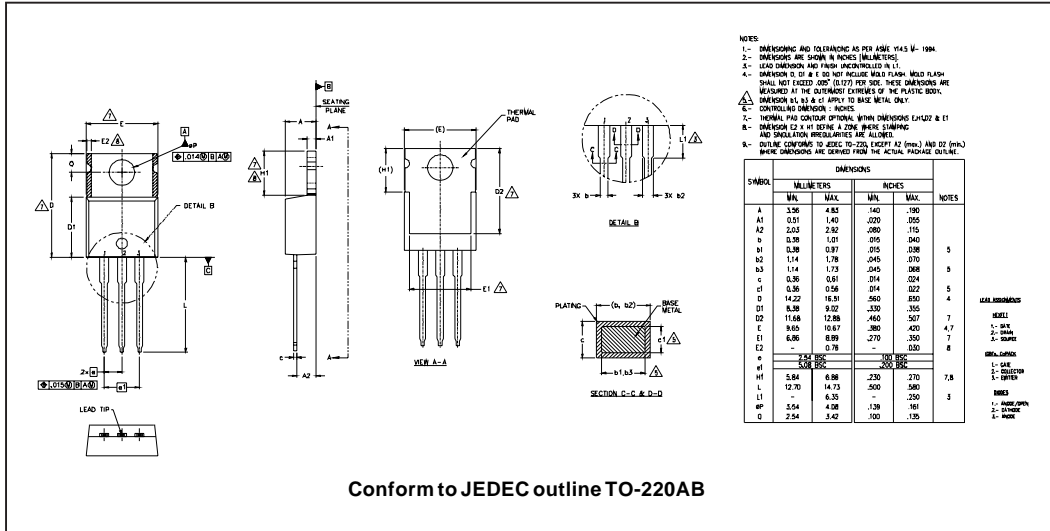


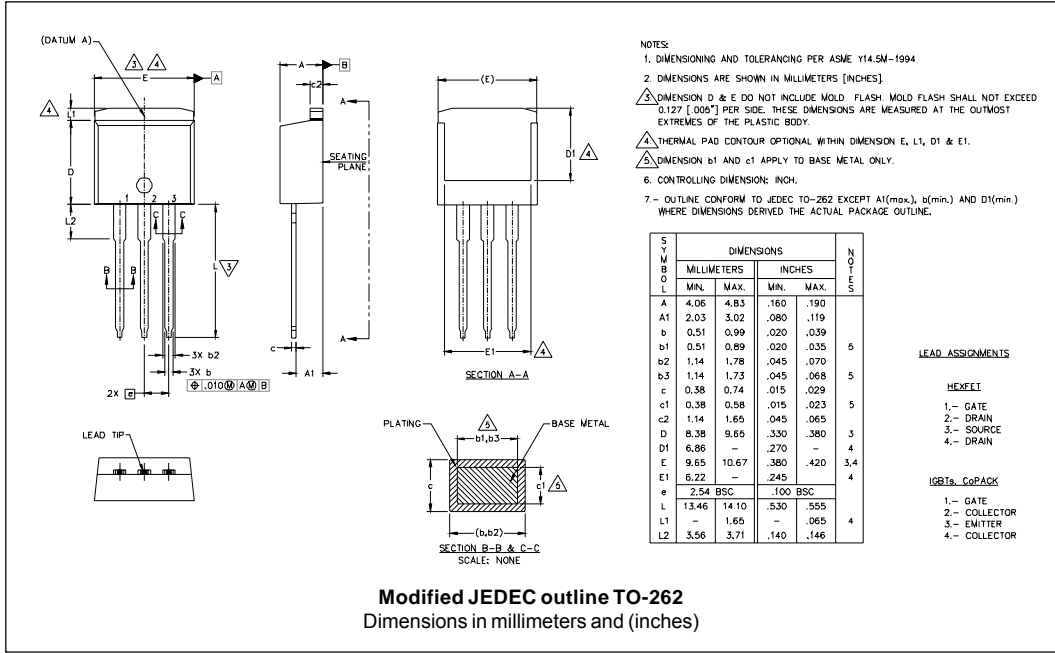
Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

- (2) Formula used:  $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$ ;  
 $Pd$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);  
 $Pd_{REV}$  = Inverse Power Loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1}$  = rated  $V_R$

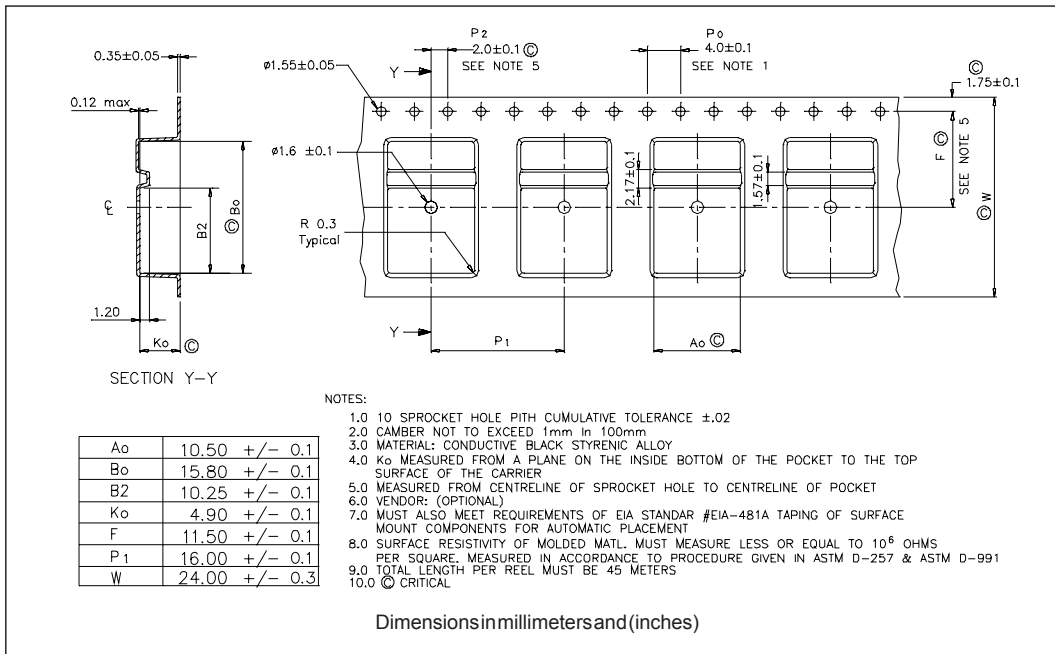
Outline Table



Outline Table



Tape & Reel Information



Part Marking Information

<p>TO-220</p>	<p>EXAMPLE: THIS IS A MBR3045CT          LOT CODE 1789          ASSEMBLED ON WW 19, 2000          IN THE ASSEMBLY LINE "C"</p>	<p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 0 = 2000 WEEK 19 LINE C</p>
<p>D<sup>2</sup>PAK</p>	<p>EXAMPLE: THIS IS A MBRB3030CT          LOT CODE 8024          ASSEMBLED ON WW 02, 2003          IN ASSEMBLY LINE "C"</p>	<p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 3 = 2003 WEEK 02 LINE C</p>
<p>TO-262</p>	<p>EXAMPLE: THIS IS A MBR3030CT-1          LOT CODE 1789          ASSEMBLED ON WW 19, 2002          IN ASSEMBLY LINE "C"</p>	<p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 2 = 2002 WEEK 19 LINE C</p>

Ordering Information Table

Device Code																	
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">MBR</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">30</td> <td style="padding: 5px;">45</td> <td style="padding: 5px;">CT</td> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">TRL</td> <td style="padding: 5px;">-</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> <td style="text-align: center;">⑦</td> <td style="text-align: center;">⑧</td> </tr> </table>	MBR	B	30	45	CT	-1	TRL	-	①	②	③	④	⑤	⑥	⑦	⑧
MBR	B	30	45	CT	-1	TRL	-										
①	②	③	④	⑤	⑥	⑦	⑧										
<b>1</b>	- Essential Part Number																
<b>2</b>	- <ul style="list-style-type: none"> <li>• B = D<sup>2</sup>Pak     <b>6</b> none</li> <li>• none = TO-220     <b>6</b> none</li> <li>• none = TO-262     <b>6</b> = -1</li> </ul>																
<b>3</b>	- Current Rating (30 = 30A)																
<b>4</b>	- Voltage Ratings																
<b>5</b>	- CT = Essential Part Number																
<b>6</b>	- <ul style="list-style-type: none"> <li>• none = TO-220     <b>2</b> none</li> <li>• none = D<sup>2</sup>Pak     <b>2</b> = B</li> <li>• -1 = TO-262     <b>2</b> none</li> </ul>																
<b>7</b>	- <ul style="list-style-type: none"> <li>• none = Tube (50 pieces)</li> <li>• TRL = Tape &amp; Reel (Left Oriented - for D<sup>2</sup>Pak only)</li> <li>• TRR = Tape &amp; Reel (Right Oriented - for D<sup>2</sup>Pak only)</li> </ul>																
<b>8</b>	- <ul style="list-style-type: none"> <li>• none = Standard Production</li> <li>• PbF = Lead-Free (for TO-220TO-262 and D<sup>2</sup>Pak tube)</li> <li>• P = Lead-Free (for D<sup>2</sup>Pak TRR and TRL)</li> </ul>																

35 = 35V  
 45 = 45V

Data and specifications subject to change without notice.  
 This product has been designed and qualified for Industrial Level.  
 Qualification Standards can be found on IR's Web site.





### Notice

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